

Meeting of the CCSP Product 3.3 Committee on "Weather and Climate  
Extremes in a Changing Climate"  
National Climatic Data Center, Asheville, North Carolina  
October 22-24, 2007

Monday, October 22

Dr. Christopher Miller, Designated Federal Officer of the National Oceanic and Atmospheric Administration (NOAA) Climate Change Science Program (CCSP) Product Development Committee (CPDC) for Synthesis and Assessment Product 3.3 (CPDC – S&A 3.3) called this fourth FACA meeting to order at 8:25 am, described the implications of FACA, and spoke about the final clearance process. The meeting proceeded in accordance with the published agenda ([http://www.cpo.noaa.gov/index.jsp?pg=../ccsp/33\\_meetings.jsp](http://www.cpo.noaa.gov/index.jsp?pg=../ccsp/33_meetings.jsp)).

Public Comment

There was no request from the public to make an oral comment or statement during the official public comment period. There were two documents submitted for the record prior to the meeting (in accordance with the directions in the Federal Register Notice for the meeting). These documents, which were made available before the meeting to all members of the committee for their review, are attached to the meeting notes.

Discussion

The purpose of the meeting was to respond to the public review comments and CCSP/CENR science and technical review comments on the second draft of the report and to initiate work to produce the third (and final) draft. Co-Chairs Tom Karl and Jerry Meehl reviewed the goals of the meeting and the procedures to be followed. Topics covered included: (1) the cut-off date for publications to be referenced in the report (new material must be accepted for publication by Dec. 1); (2) general questions regarding production of the report; (3) schedule of remaining events in 2007-2008, including briefing(s) to NOAA management as part of the lead agency certification process.

The Convening Lead Authors (CLAs) led a discussion of their respective chapters (public and agency comments received, responses and proposed document revisions).

Tom Karl and Jerry Meehl led a discussion of the Abstract - possibly to be renamed the 'Synopsis' - and Executive Summary (comments received, responses and proposed document revisions).

## Tuesday, October 23

The CLAs led breakout sessions for resolution of issues.

The co-Editors led a session to finalize the Executive Summary and Abstract.

## Wednesday, October 24

The author team worked on revisions to the report responding to the public comments and the CCSP/CENR science and technical review comments.

The author team addressed resolution of technical issues with figures, etc.

There was a general review of the remaining schedule of events leading to publication of SAP 3.3.

Meeting adjourned at 2 pm.

## Meeting Decisions and Actions

Findings and conclusions related to aspects of hurricane activity and ocean wave activity will be finalized in post-meeting discussions among author team members.

The schedule for preparation of the third draft of the document is as follows:

Oct. 25-Nov. 14

Author Team revises draft addressing public review comments and finalizes document

Nov. 15

CLA uploads final MS Word document to 3.3 website

Nov. 16

Science editing process begins

CLAs need to be available to respond to new draft documents for quick-turnaround review Nov. 19-21

Nov. 27

Layout/Design process begins

All text is moved from MS Word into layout

All further edits must be made by design team

Nov. 30

Send reviewer comment responses to Bill Murray

Dec. 3-5

Editorial Team working on layout/pull quotes, design

CLAs need to be available these dates for proofing and sending comments back quickly

Dec. 6-14

Final stages of layout

CLAs need to be available this week for final proofing and submitting signed approval form

Dec. 17

NCDC Graphics Team to upload final pdf files to CCSP website ([www.climatescience.gov](http://www.climatescience.gov))

Lead Agency (NOAA) certification

NSTC review and CCSP Principal approval

## ATTACHMENTS

### STATEMENTS FURNISHED FOR THE PUBLIC RECORD OF THIS FACA MEETING

Submission #1

Comments on CCSP SAP 3.3 (chapters 2 & 3)

#### I. Background Information

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## II. Comments

Chapter 2, Page 96-97, Lines 2154-2165 (and in supporting sections): I have seen the comments by Chris Landsea and I have read the contrarians' papers he refers to that allege an upward trend in tropical cyclones. I don't want to repeat his specific comments but in general I support them fully. Nobody understands the HURDAT database better than Landsea. The historical data on tropical cyclones simply does not support the conclusions on lines 2154-2165. The CCSP document must maintain a conservative stance on this particular issue and avoid unwarranted conclusions. David Enfield, NOAA-AOML

Chapter 2, Page 178-179, Lines 3973-3984: At line 3984 the following should be added: "In the absence of a sufficiently long instrumental record, there are two indicators in favor of a naturally occurring AMO: (a) coupled global climate models unforced by greenhouse gases sustain coherent fluctuations of North Atlantic SST and meridional overturning of the kind attributed to the AMO (Delworth and Mann, 2000; Latif et al. 2004; Knight et al. 2005); and (b) a 4.5 century AMO index based on dendrochronological records from Europe and eastern North America correlates well with the instrumental AMO and is statistically similar in the centuries prior to 1850 (Gray et al. 2004; Enfield and Cid-Serrano 2006)." David Enfield, NOAA-AOML

Chapter 3, Page 249, Line 5597: after "(ENSO),", insert "the Atlantic Multidecadal Oscillation (AMO),". David Enfield, NOAA-AOML

Chapter 3, Page 251-252, Lines 5644-5666: I would ask the authors of these paragraphs to consider whether late-breaking research on the possible impact that recent Arctic albedo changes (due ice pack reduction) may be having on the NAM and NAO would merit further discussion. I am not familiar enough with this literature to venture a specific suggestion, but it is difficult for me to imagine that the trend of disappearing summer ice pack would not affect these climate modes. David Enfield, NOAA-AOML

Chapter 3, Page 265, Lines 5977-5978: This is redundant with a previous bullet. Eliminate this bullet or combine it with lines 5966-5968. David Enfield, NOAA-AOML

Chapter 3, Page 307, Lines 6937-6940: This conclusion about Atlantic activity (TC frequency) is unwarranted in view of the previous, more detailed discussions of the various uncertainties. Vecchi and Soden (2007) have shown that the Atlantic hurricane environment becomes hostile to hurricane development under the IPCC projections, with more shear and less mid-tropospheric humidity. There are good physical reasons for this (Enfield et al. in preparation). The conflicting trends between the increasing MPI and the more hostile environment mean that no meaningful projection can be made, although a plausible guess is that overall activity could decrease while the proportion of major hurricanes to total storms could increase. I suggest that the sentence in question be dropped. David Enfield, NOAA-AOML

#### Additional references

- Enfield, D. B. and L. Cid-Serrano, 2006: Projecting the risk of future climate shifts. *Int. J. Climatol.*, 26, 885-895.
- Knight, J. R., R. J. Allan, C. K. Folland, M. Vellinga, and M. E. Mann, 2005: A signature of persistent natural thermohaline circulation cycles in observed climate. *Geophys. Res. Lett.*, 32, doi:10.1029/2005GL024233.
- Latif, M., E. R. M. Botset, M. Esch, H. Haak, S. Hagemann, J. Jungclaus, S. Legutke, S. Marsland, and U. Mikolajewicz, 2004: Reconstructing, monitoring and predicting multidecadal-scale changes in the North Atlantic thermohaline circulation with sea surface temperature. *J. Climate*, 17, 1605-1614.

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#### Submission #2

Review of CCSP Chapters 2 and 3 – Tropical Cyclones

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I have been asked to comment on the CCSP report by Chris Landsea as a “neutral party” although I doubt that anybody can/will be considered unbiased in this discussion. I thought it worthwhile for me to look over the report’s findings concerning impact of tropical cyclones and make a few comments.

The effect of global warming on tropical cyclone activity is under intense scrutiny and debate. I will confine my comments only to those of Chapter 3.39 on tropical storms, since this has been where I have been active in storm research using numerical model tools. I will not comment to any large extent on the Chapter 2.2.3.1 on the observed record of tropical cyclone other than that in my opinion the observed record is tainted by inadequate/inaccurate early observations and inconsistent temporal changes in observational methodology. Thus in my opinion any significant long term trend extending before the satellite era is in question. Recent updates to earlier records appear to have reduced any increased tendency in tropical storm activity to the near-noise level. The attribution of changes in tropical cyclone activity to human activity is also difficult to assess in contrast to the more direct effect on atmospheric quantities such as low level temperature. From a modeling perspective, a nagging question is the irreconcilable contrast in climate model upper level warming in global warming scenarios in contrast to its relative absence in the observational record to date. This has severe consequences in evaluating tropical cyclone behavior since tropical disturbances are quite sensitive to upper level temperature as well as SST. In addition, an incomplete understanding of the controls of tropical cyclone intensification from both observational and modeling perspective call for constraint on making definite conclusions without at least mentioning caveats.

#### Chapter 3.39 Tropical Storms.

Basically, in my opinion, I have no real arguments with the conclusions of Chapter 3.39 that 1) Tropical cyclone intensity may increase although it is still debatable whether we have actually seen an increase due to human activity as opposed to natural cycles and 2) it is still unclear “how late 21<sup>st</sup> century tropical cyclone frequency in the Atlantic and Northern Pacific basins will change”. In addition I agree with the conclusions in 3.3.9.4 that an increase in hurricane rainfall is expected

due to the more direct response of rainfall to an anticipated further increase in SST.

In Landsea's review he states that "The chapter concludes that (1) "the balance of evidence suggests that human activity has caused a discernable increase in tropical storm/hurricane and major hurricane frequency in the North Atlantic"". I did not see that conclusion being made, but I too think that statement goes beyond the state of the science to date. Some specific comments follow:

On page 301, top paragraph.. Knutson et al. 2007, was referenced incorrectly. The downscaling study will be published in BAMS and is presently not in the reference list. I have included it below.

On page 303, top paragraph... "...with the increase water vapor being extremely likely to accompany a warming of tropical SSTs."

On page 304, top paragraph.. " .. there is a tendency towards tropical cyclone rainfall simulations to have a high bias in core rainfall rates..."

On page 305, bottom... " .. is whether regions which have never or only infrequently experienced tropical cyclones..."

New Reference:

THOMAS R. KNUTSON, JOSEPH J. SIRUTIS, STEPHEN T. GARNER,  
ISAAC M. HELD, AND ROBERT E. TULEYA. Simulation of the Recent  
Multidecadal  
Increase of Atlantic Hurricane Activity Using an 18-km-Grid Regional  
Model  
To be published in Fall 2007, BAMS.

